Application of Computers to Research on Nucleic Acids

Edited by D. Soll and R.J. Roberts

IRL Press; Oxford, Washington, 1982
458 pages. £9.50

The Application of Computers to Research on Nucleic Acids comprises one issue of Nucleic Acids Research (volume 10, number 1, January 1982). Its 38 papers are a tribute to the remarkable success of the rapid sequencing techniques developed for DNA by Sanger and by Maxam and Gilbert. The rapid accumulation of sequence data has created a need for both the storage and analysis of nucleic acid sequences. The programmes described embrace the design of sequence experiments (including a shot-gun approach), reading sequencing gels, and the storage and analysis of sequence data. The aspects of the analysis of sequence data for which programmes are presented range from the recognition of restriction sites and sequence symmetries, drawing circular restriction maps, analysis for amino acid sequence data and the investigation of codon preferences. The comparison of nucleic acid sequences is also made easier by programmes designed to identify sequence homologies and phylogenetic relationships. The computation of the secondary structure of RNA is a more speculative enterprise but the programmes presented advance the subject.

The editors aim to provide a starting point for the investigator newly discovering a need for these sorts of programmes and to stimulate those already deeply involved to exchange and improve existing programmes. This volume is geared to the specialist rather than the general reader and broadly fulfils the aims of the editors. This collection of papers is likely to prove very useful for those interested in nucleic acids, especially since the storage and analysis of sequence data presents a problem that the computer is well suited to solve. This volume provides excellent value for money because it is an inexpensive guide that delineates the current status of the subject.

R.A. Cox

The Operon

Edited by Jeffrey H. Miller and William S. Reznikoff

Cold Spring Harbor Laboratory, New York, 1980
viii + 470 pages. $24.00

This is the second edition of this excellent book and differs from the first in the inclusion of 3 reprints as an Appendix, to expand the coverage of attenuation. This edition is printed as a paperback and should thus be accessible to a wider audience.

The first half of the book is based on a meeting on the lactose operon held in Cold Spring Harbor in 1976. The second half presents other bacterial genetic regulatory systems which differ from the *lac* operon: the tryptophan and galactose operons of *E. coli*, bacteriophage λ, the histidine utilization system of *S. typhimurium* and *K. aerogenes*, the arabinose regulon of *E. coli* and phase variation in *Salmonella*. Thus, the reader can appreciate the variety of mechanisms by which genetic regulation is effected in bacteria; and who can doubt that this knowledge has greatly influenced the questions currently being asked of eukaryotes?

Even though this volume was revised in early 1980, the picture has not changed substantively since then. On the one hand, undergraduates or research workers wishing to obtain an overview of